

PURE THREAD
SILK HALF HOSE
59c
3 Pairs for \$1.65
D. J. Kaufman
1005-7 Pa. Ave. 618 17th St.

Hundreds Aid Y. W. C. A.
More than 300 representative women of Washington will be at the Young Women's Christian Association, which begins tomorrow night with a supper at Epiphany Church. Of these, 250 are team workers who will begin their work bright and early Tuesday morning.

LOANS
HORNING
Diamonds, Watches, Jewelry
South End of Highway Bridge

Pittsburg
Automatic Gas Water Heaters
Edgar Morris Sales Co.
1308 G st. w. Main 1032-1033.

M. BROOKS & CO.
1109-1111 G St. N. W.
Exclusive and distinctive styles in women's and misses' wearing apparel.

CLOTHING ON CREDIT
H. ABRAMSON
7th & L Streets N. W.

DR. LEHMAN
DENTAL SURGEON
PLATE SPECIALIST
Plates Repaired While You Wait
Crown, Bridge, and Porcelain Work, Painless Extractions.
307 7th St. N. W.

Men's HATS
Cleaned and Blocked as Good as New
Vienna Hat Company
409 11th St. N. W.

LOCAL MENTION.
The Real Estate Shop.
—CLAFIN OPTICAL CO.—
1314 G st. w., opp. Epiphany Church.

A DELIGHTFUL SEASON
TO VISIT
Eastern Virginia
Norfolk
Virginia Beach
(ALL YEAR REPORT)
Daily Steamers from Washington
BOSTON AND PROVIDENCE
BY SEA
City Ticket Office, 731 15th St. NW
NORFOLK & WASHINGTON STEAMBOAT COMPANY

QUICK RELIEF FROM NERVOUS HEADACHE

Do you ever start the day with nerves tense, head throbbing, your whole frame taut and on edge?
Pure aspirin alone, you may fear to take because it gives you heartburn—but fear it no longer.

TRIPLE'S LAXO ASPIRIN, the new perfected aspirin, combines the wonderful pain combating powers of genuine aspirin with a digestant added to prevent this after-dinner discomfort. Its laxative qualities further benefit the general system, enabling the body to throw off the toxins or poisonous wastes, which when pent up in the system are the cause of headaches and pain.

No aspirin on the market can so readily attack the pain of a headache. Be sure when you ask for aspirin to ask for **TRIPLE'S LAXO ASPIRIN**. It is the only aspirin with the three points:

- It's absorbed easily
- It softens the bowels
- It's a mild laxative

TRIPLE'S LAXO ASPIRIN

Ask your druggist for the "Three Point Brand" (The National Research Laboratories, Washington, D. C.)

RELIABLE DENTISTRY

Success in dentistry means doing dental work better than any competitor. It is why DR. WYETH and his staff of experts have succeeded. Thirty years of practical experience is your guarantee of getting a reliable dentistry. This is your opportunity to have good teeth at a reasonable price—why not accept it? All work done without the slightest semblance of pain. Dr. Wyeth and Staff of Experts. Careful Dentists—that has been my record for the past 30 years. Terms of payment to suit—examination free. Cleaning is one of our many striking features.

My perfect Surrogate Teeth Will Not Slip or Drop. Other Kinds of Teeth, \$5.00 up. Gold Crowns and Bridge Work. \$3—\$4—\$5 Fillings, 50c to \$1 up. Per Tooth in gold, silver, amalgam or porcelain.

Open Every Evening Until 9 o'clock, and on Sundays 10 A. M. to 5 P. M. Lady and child in attendance. All work fully guaranteed for 30 Years. Kindly keep name and location of our office in your mind.

Dr. Wyeth
427-23 7th Street N. W.
Opposite Lanchester & Bro. and over Grand Union Tea Co. Largest and most thoroughly equipped parlors in Washington. Ph. M. 3066

TRACES RADIO DEVELOPMENT

James W. Cook Addresses Club on New Form of Amplification.

OLD DEVICES CRUDE

Describes Working of Vacuum Tubes and Use of Radio Frequency.

At a meeting of the Washington Radio Club at 1317 New York avenue last evening, James W. Cook, in an address on "Radio Frequency Amplification," traced the growth of radio receiving from the day when the coherer was used as the first radio detector, to the day of the crystal detector and up to the present moment when the vacuum tube is the last word in the reception of radio signals.

"Some years ago a radio receiving set consisted of a coherer, a delicate relay and a large aerial wire," said Mr. Cook. "This crude device could not be depended on for continuous service; it could not be adjusted for varying wave lengths and was by no means sensitive. Then came the crystal detector, requiring no mechanical accessories, a device much more sensitive than the coherer. The first trial of the signal depended on the current flow through crystal and circuit.

Limited to Short Distances. "The disadvantages of this development in radio science were the comparatively short distances signals could be received in consideration of the power used at the transmitting station; easily lost adjustment, which was regained with difficulty.

Mr. De Forrest invented the audio tube. The principle had been stated by Edison that a filament heated to incandescence gives off negative electrons. De Forrest applied this principle to the reception of radio signals. A filament, wire spiral or grid, and a metallic plate were inclosed in a high vacuum tube. The theory was that the heated filament gives off negative electrons which fly off into space at tremendous speed.

Plate Given Potential. "If the grid, between the filament and the plate has no electric potential, these electrons pass through the grid and strike the plate. If the plate is given a potential, say by connecting it with a 50-volt dry cell; and the positive side of the filament to the negative source, we would then have a constant flow of electrons. We would then have a complete circuit. The negative electrons leaving the filament bombard the plate, reducing its positive potential. The plate being connected to the positive terminal of the battery, the filament will tend to maintain the plate at blue potential, causing a current to flow in the plate to filament circuit.

Mr. Cook described in detail the behavior of the vacuum tube under various changes of hook-up which eventually resulted in the use of the vacuum tube as a detector of radio signals. Incoming waves striking the antenna, which is connected to the grid, would induce alternating positive and negative charges of electricity of extremely high frequency depending on the wave length received. On short waves this frequency or oscillation is at least 1,000 kilocycles per second.

Able to Detect Signals. "The minute charges of electrons," continued Mr. Cook, "will produce similar results as obtained with a battery as a source of potential. If we insert sensitive telephone receivers in series with the plate circuit we will be able to detect signals when the operator starts and stops transmitting, or the dot and dash code. The modern tube detector then is an amplifier which by a slight change of potential will control a potential and current flow of much greater proportions. Because of the delicate adjustment made possible in the modern vacuum tube, the speaker, a bed-spring aerial has been developed with success. Two tubes are used as detectors, and a third as an audio frequency amplifier to increase the strength of signals. Skillful operation is required, however, for such an aerial is used. We can increase the strength of signals by inserting a transformer made of two coils of wire wound on an iron core.

New Amplifier Invented. "When a signal is so weak that it is not audible in the phones, or the potential of the grid is too low, we may still make the signals audible by amplifying them before they are impressed on the grid of the detector tube. This came about by the invention of the radio frequency amplifier. The resistance coupled amplifier was one of the first used, which had a limited range of usefulness. Finally, there developed the tuned radio frequency amplifier which proved impracticable for commercial use because its range was limited. It required sharp tuning and inequalities of tubes had a detuning effect. The invention then of the transformer coupled radio frequency amplifier by Brent Daniel, formerly of the Federal Bureau of Investigation, provided an amplifier which has a fixed impedance, requiring no adjustment. The range is increased by inserting transformer. Advantages are a simplicity of operation, a large amplification which make the use of a loop aerial practicable. This type of aerial is today used extensively and has the advantage of simplicity and directional effect; it is inexpensive and reduces static."

THE QUEENS OF FLOWERS
—are here in abundance—select the Easter blooms here. Grade, 1214 P. Adv.

BED-SPRING RADIOPHONE CATCHES MANY STATIONS

Improved Aerial Proves Efficient With Regenerative Set.



"Now listen, my children and you shall hear how the Elephant got his trunk," said the Crocodile. No, this story is not to continue along that line except to mention it as the first thing heard through the air when The Herald man listened in the other evening from the apparatus shown above. The set-up of this radiophone is perhaps the most efficient and unique in Washington. It could be packed in a small trunk.

GIVES SHARP TUNING. What makes it unique is the fact that the owner, Harry Corcoran, 1483 Newton street northwest, uses his bed spring for an aerial. This fact has no connection with dreaming. After listening for awhile to the remainder of the speech started above, which, by the way, was from KDKA, this station, was tuned out and Newark came in just as clearly. Then WMU came in with some choice music. Now the strange thing is that this local station was tuned out and KDKA and WJZ received again.

The technical side of this bed-time story follows. It is a single circuit regenerative set. Current is furnished by a six volt, sixty ampere battery. Two variometers; two condensers, one with vernier attachment; one detector tube, one stage audio amplification from two B batteries.

USES THREE PAIRS OF PHONES.

Although three pairs of phones are now connected to the set, signals are received very clearly in each. Detroit, Springfield and Schenectady have been received on several occasions. Attached to the spring of the wire iron bedstead is the antenna lead. The ground connection is made to a water pipe in the room and the radiator. Much of the material in the set is prewar material.

Anyone going on a summer camping trip and anxious to carry along a convenient aerial will do well to take along a bed-spring and sleep in comfort. A bed-time story may be heard any evening. Ask Mr. Corcoran.

In the Air Today.

WASHINGTON.
NAA—NAVAL RADIO STATION.
ARLINGTON, VA.

10:30 a. m.—Meteorological report on 5,950 meters of arc transmitter.

Wavelength, 2,650 meters. 12 m. and 10 p. m.—Time signals, weather report, ship orders.

10:30 p. m.—Naval press news. CHURCH OF THE COVENANT, Conn. Ave. and 8 St. 360 Meters.

11 a. m.—Morning service, sermon by Dr. Charles Wood, D. D., pastor.

3:30 p. m.—Afternoon service, sermon by Col. John Temple Graves on "Lincoln Memorials."

8 p. m.—Evening service, sermon by Dr. Wood in series, Messages from Books, Sacred and Secular, Concerning Pharaoh, Jeremiah, Carlyle and Emerson. Choir, 100 voices.

WJZ—NEWARK. 360 Meters.

2:45 p. m.—Tuning test (music).

3 p. m.—Radio-chapel services.

4, 5, 7:15 and 8 p. m.—Sacred and classical music, and appropriate talks.

3 p. m.—Radio chapel services. Sermon.

4 p. m.—Sacred music recital. 5:20 p. m.—"Sandman Tales," by Abbie Phillips Walker.

7 p. m.—Recital by Ruth McGuirk, pianist, age 12. Duets by Walter McGuirk and Harold Kelly, age 7. These boys entertained over 500,000 soldiers in the camps during the last two years of the war.

7:30 p. m.—"U. S. Coast Guard Service," by E. L. Reed, commander New York Division, U. S. C. G.

8 p. m.—Recital by Yvonne De Treville.

9:30 p. m.—Recital by Mlle. F. Rezia.

KDKA—PITTSBURGH. 360 Meters.

10:45 a. m.—Services at Calvary Episcopal Church, Shady

avenue. Rev. E. J. Van Etten, rector.

2:45 p. m.—"The Boy With a New Coat," a Bible story for the children.

3 p. m.—Radio chapel at Station KDKA, conducted by Rev. John Ray Evans.

7:30 p. m.—Services of the Point Breeze Presbyterian Church, Dr. P. H. Barker, minister.

WJZ—SPRINGFIELD, MASS. 360 Meters.

3 p. m.—Radio chapel, Rev. H. E. Chapman, Carew Street Baptist Church.

8 p. m.—Church services at studio.

KYW—CHICAGO. 360 Meters.

3:30 p. m.—Radio chapel. News.

Radio Club Scores Bad Transmission

A petition was passed by the Washington Radio Club in session last night censuring local transmitting stations whose modulation is generally recognized as bad. Poor acoustics, broad tuning and excessive generator noise were other disturbances scored in the sharp criticism made by club members.

"Novices who are listening in are discouraged and aggravated by such defective transmission," reads the petition. It is recommended that certain stations discontinue their transmitting defects until these defects are remedied. After sixty-two signatures were affixed, the resolutions were forwarded to a number of local broadcasting stations.

RAY T. CAMPBELL CO.

Aerials Installed

Radio Receiving Sets hooked up. Instructions given for the operation of any set. We correct your radio troubles.

Lin. 2956 1437 Penn. Ave. S. E.

Broadcasting Programs, Dates and Wavelengths for This Week.

LOCAL STATIONS DAILY.

NAA—NAVAL RADIO STATION.

10:30 a. m.—Meteorological report on 5,950 meters of arc transmitter.

12 m. and 10 p. m.—Time signal, weather report, ship orders.

10:30 p. m.—Naval press news. Wavelength, 2,650 meters.

WWX—POSTOFFICE DEPARTMENT STATION.

10 a. m.—Weather report; 10:30 a. m., marketgram; both radiophone on 1,160 meters.

12:30 p. m., 2:45 p. m., 3:30 p. m., C. W. telegraph marketgram on 1,980 meters; 5 p. m., dairy products for New York, and grain report. Radiophone 1,160 meters.

7:30 p. m. and 8 p. m., radio marketgrams; 9:30 p. m., weather report. All radiophone on 1,160 meters.

WMU—DOUBLEDAY-HILL ELECTRIC COMPANY. 360 Meters.

4:30 to 5:30 p. m.—Music.

MONDAY ONLY.

WPM—THOMAS J. WILLIAMS SONS, INC. 360 Meters.

8 p. m.—Lecture and music.

TUESDAY ONLY.

NOF—4 to 4:30 P. M. 1,100 Meters.

Music and Lecture.

WJH—WHITE AND BOYER. 360 Meters.

7:30 to 10 p. m.

WEDNESDAY AND FRIDAY ONLY.

NOF—8:30 to 9:50 P. M. 375 Meters.

Music and Lecture.

THURSDAY AND FRIDAY ONLY.

WMU—DOUBLEDAY-HILL ELECTRIC COMPANY. 360 Meters.

7:30 to 8:30 p. m.—Music.

DISTANT STATIONS DAILY.

KDKA—PITTSBURGH. 360 Meters.

12:30, 8 and 8:30 p. m.

WJZ—NEWARK. 360 Meters.

KYW—CHICAGO. 360 Meters.

WBZ—SPRINGFIELD. 360 Meters.

2-1A—JERSEY CITY. 200 Meters.

Hours Announced Daily.

New Electrical Store Will Open Tomorrow

A new electrical store will open at 1204 New York avenue tomorrow under the management of Mr. Perez of the Continental Electric Supply Company. This concern now operates a store at 808 Ninth street where a complete line of radio sets and accessories is on sale. The Ninth street store is equipped with a three-stage amplifier receiver and one of the finest L type aerials in the city. This aerial is 116 feet high, six wire and is the design of Walter Parks, formerly of the NOF air station. A broadcast schedule will be operated regularly from this station in about three weeks. The call letters WIL have been assigned and the wave length of 360 meters. In addition to a full line of radio equipment the new store will be supplied with books and pamphlets relating to radio telephony and telegraphy.

RADIO Battery Service

Recharging, \$1.00

Called for and Delivered

To insure Good Clear Concerts

Attach the

Exide Battery

To Your Receiving Set

O St. Service Station

12 O St. N. W.—North 2975-W

YOU Are Again Invited to a "LISTEN IN" CONCERT

Wed. Evening
April 5 at
8:30 P. M.

Thos. J. Williams, Inc.
1324 New York Ave.
THE CONCERT NIGHT

"What" Radio Gives You



CONCERTS
By the World's Noted Singers

Talk To
White & Boyer
About Your Entertainment
Radio Needs

White & Boyer
812 13th St. N. W.
The Home of Radio

JOHN C. RAU

524 12th St. N. W.

Franklin 3457

JUST ARRIVED

Stock of radio parts, including: Murdock head sets and slides, coils, remanufactured, vacuum tubes, and bulbs.

SPECIAL—

Free to everybody—a 3-sheet hook-up, describing parts and prices.

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